



## RASTER CHART DISPLAY SYSTEM FIELD TEST

### IDENTIFICATION INFORMATION

Name of Vessel TAHOKE  
Type, Tons, Length \_\_\_\_\_  
Company Name \_\_\_\_\_  
Contact Name \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Telephone \_\_\_\_\_  
E-Mail \_\_\_\_\_

### RASTER CHART EQUIPMENT IN USE DURING TEST

Navigation Software CHARTNAV 2020 VERSION 3.12  
Version \_\_\_\_\_  
Manufacturer LASER PLOT, INC 40 SWORD ST, AUBURN, MA  
Computer 508-757-2031  
Monitor Size \_\_\_\_\_  
Monitor Resolution \_\_\_\_\_  
Raster Data Brand SEA-D

### OTHER EQUIPMENT IN USE DURING TEST

Indicate (Y/N) as to whether the equipment is integrated with the raster chart navigation software. Then indicate the manufacturer and model.

GPS (Y/N) \_\_\_\_\_  
DGPS (Y/N) \_\_\_\_\_  
Radar (Y/N) \_\_\_\_\_  
ARPA (Y/N) \_\_\_\_\_  
LORAN C (Y/N) \_\_\_\_\_  
Speed Log (Y/N) \_\_\_\_\_  
Compass (Y/N) \_\_\_\_\_  
Other (Y/N) \_\_\_\_\_

*See other sheet*

**OPERATOR** (repeat on back if other operator's experience is combined in test report.)

Operator's Name

Operator's Rank

RCDS Experience

Years Experience as

- ☒ helmsman
- ☒ navigation/chart work
- ☒ officer of the watch
- ☒ Captain/Master of a vessel
- ☒ pilot
- ☒ other (specify)

**TEST AREA**

Describe the main routes or general geographic area where the RCDS was being used and evaluated:

NE CORRIDOR

**NAVIGATION ENVIRONMENT**

Estimate as a percentage of the total experience being reflected in this test report, the amount of time the RCDS was being used in the following situations.

Open Water Passage \_\_\_\_\_  
Coastal Transit 25%  
Harbor & Approach \_\_\_\_\_  
Channels/Constricted 75%  
Docking \_\_\_\_\_  
Other (specify) \_\_\_\_\_  
total 100%

Heavy Traffic \_\_\_\_\_  
Medium Traffic \_\_\_\_\_  
Light or No Traffic \_\_\_\_\_  
total 100%

Day Navigation \_\_\_\_\_  
Night Navigation \_\_\_\_\_  
total 100%

Excellent Visibility \_\_\_\_\_  
Fair Visibility \_\_\_\_\_  
Poor Visibility \_\_\_\_\_  
No Visibility \_\_\_\_\_  
total 100%

Quiet Seas 1  
Light Seas 1  
Moderate Seas 1  
Heavy Seas \_\_\_\_\_  
total 100%

Approximate Total Days of Navigation  
Being Summarized in This Test Report:  
Over How Long a Period?

(example answer: Approx. 8 months over 1 year with the rest being in-port periods.)

**EVALUATION SCALE (use for all questions)**

DESCRIPTORS & SCORE					
does not apply	much worse than paper chart	somewhat worse	comparable to paper chart	somewhat better	superior to paper chart
0	1	2	3	4	5
cannot comment	significant problem	minor problem	no problem	minor advantage	significant advantage
0	1	2	3	4	5
did not observe	hard to use	moderately difficult use	adequate ease of use	moderately easy to use	easy to use
0	1	2	3	4	5
did not use	inadequate	marginal	acceptable	good	excellent
0	1	2	3	4	5

**EVALUATION SCALE (use for all questions)****1. RCDS AS A VOYAGE PLANNING TOOL**

If using an RCDS for voyage planning is about the same as using a paper chart, then score the item in the middle of the range at "3".

Ref #	Scores (1-5 or 0)	Questions (compared to paper chart performance where appropriate)
		<b>How would you evaluate doing the following navigation functions with a raster chart compared to doing the comparable functions on a paper chart?</b>
1.1	4	- entering routes, the adequacy of the number that could be entered?
1.2	3/1	- entering waypoints and if an adequate number were allowed?
1.3	4	- adding waypoints to a route after entering or reloading it?
1.4	5	- deleting waypoints from a route?
1.5	5	- changing the position of a waypoint?
1.6	3	- changing the order of waypoints in a route?
1.7	2	- entering an adequate number of alternative routes?
1.8	3	- distinguishing alternate routes from the principal one?
1.9	4	- displaying routes over other charts?
1.10	5	- reloading previously planned routes for further planning?
1.11	5	- dropping or inserting waypoints in real-time as you went?
1.12	5	- loading load tracks actually sailed for use in planning?
1.13	5	- specifying a cross-track error to trigger an automatic alarm?
1.14	5	- entering and annotating marks (operator-entered points)?
1.15	5	- editing and/or deleting marks?
1.16	5	- entering points, lines or areas which would activate an alarm such as guard zones, boundaries, range circles, etc.?
1.17	4	- entering notes that you wanted to enter?
1.18	5	- preparing a printed a voyage plan, a get home chartlet, GPS waypoints?

		<b>Remember, you are to evaluate doing the following navigation functions using a raster chart compared to doing the comparable functions on a paper chart.</b>
1.19	5	- calculate the distance of your planned trip?
1.20	5	- calculate bearing and distance to waypoints?
1.21	5	- estimate transit time(s)?
1.22	5	- recalculate time along track if you moved waypoints?
1.23	4	- readily display all the charts you needed?
1.24	5	- move around the chart (pan and zoom) while planning?
1.25	5	- display previously entered data over any chart you wanted?
1.26	5	- make the planning assessments and judgements that you would make with a paper chart?
1.27	5	How was the planning workload compared to a paper chart?
		<b>Score the following questions without comparing to a paper chart.</b>
1.28	5	How was the legibility of the chart image during your planning session?
1.29	3	How was the impact on planning of seeing only a <u>portion</u> of a chart on the screen at one time?
1.30	3	How was the impact of chart notes not always being visible?
1.31	11	How was the impact of some charts being on different map projections?
1.32	5	How would you compare planning using a raster chart system with planning using manual means and a paper chart?
1.33		<p>Were there any fundamental limitations to planning using raster charts that were not just a limit of your software? What were they?</p> <p><i>Chart view and <del>display</del> legibility</i></p>

## **2. RCDS FOR VOYAGE MONITORING**

If using an RCDS for **voyage monitoring** is about the same as a paper chart, then score the item in the middle of the range at "3".

<b>Ref #</b>	<b>Scores (1-5 or 0)</b>	<b>Questions</b> (compared to paper chart performance where appropriate)
		<b>How would you evaluate doing the following navigation functions using a raster chart compared to doing the comparable functions on a paper chart?</b>
2.1	2	- displaying clearly all chart and voyage monitoring information?
2.2	5	- add or remove mariner-added information?
2.3	5	- display, hide or query mariner-added information?

		<b>Remember, you are to evaluate doing the following navigation functions using a raster chart compared to doing the comparable functions on a paper chart.</b>
2.4	5	- determine if a larger scale chart covers the area you are navigating?
2.5	5	- distinguish the ship's track and mariner's notes on the image?
2.6	5	- showing your position accurately on the chart in real-time?
2.7	3	- performing dead reckoning if your positioning system failed?
2.8	6	- displaying a planned route?
2.9	4	- displaying an alternate route in addition to the selected one?
2.10	3	- distinguishing the alternative route from the selected one?
2.11	5	- modifying the selected route?
2.12	5	- find and display any chart easily during voyage monitoring?
2.13	5	- move around the chart (pan and zoom) to monitor your voyage?
2.14	3	- look-ahead on the route during route monitoring?
2.15	5	- achieve an adequate overview of the voyage and route?
2.16	5	- transfer information you entered <sup>into</sup> other charts?
2.17	3	- view chart notes which were located off-screen?
2.18	5	- create event marks at any time and annotate them?
2.19	5	- estimating of arrival time compared to a paper chart?
2.20	5	- display the coordinates of any point on demand?
2.21	5	- enter coordinates and then display that position on demand?
2.22	5	- determine your lat./long. at any time?
2.23	5	- dynamically measure range and bearing to charted objects?
2.24	5	- monitor voyage parameters (speed over ground, course over ground, speed made good, time to go,...)?
2.25	5	- switch from chart to chart manually in a convenient manner?
		<b>Score the following questions without comparing to a paper chart.</b>
2.26	5	The adequacy of the screen size?
2.27	5	Screen "clutter" compared to a paper chart during voyage monitoring?
2.28	5	The night colors for comfortable and legible viewing?
2.29	11	Did the ship and route automatically appear whenever the display covered that area?
2.30	5	Did the chart automatically pan as the ship reached an appropriate distance from the edge of the screen?
2.31	5	View an area of the chart that did not contain the ship and have route monitoring/positioning continue in the background?
2.32	5	By a single action, show chart scale, datum, and depth and height units?
2.33	2	Determine range and bearing to items that were off-screen?
2.34	5	Restore the ship-centered display with a single action?
2.35	5	Did waypoint arrival alarms work as you wished?
2.36	5	Did boundary crossing alarms work as you wished?
2.37	4	Were there frequent false alarms?
2.38	5	Did an alarm sound when you exceeded the cross track error limit?

		<b>Remember, you are scoring the following questions without comparison to a paper chart.</b>
2.39	5	Did an alarm sound if the ship, within a mariner-specified time or distance, was to reach a critical point on the planned route?
2.40	5	Did your system give an indication if positioning system input was lost?
2.41	3	If 2 positioning systems were used simultaneously, did the system identify discrepancies between the two?
2.42	5	Was route monitoring carried out in a simple and reliable manner?
2.43	5	In restricted waterways, how was the RCDS as a voyage monitoring tool compared to the paper chart?
2.44	5	In congested waterway situations, how was the RCDS as a voyage monitoring tool compared to the paper chart?
2.45	5	Could time-labels along the ships track be displayed easily at a range of intervals between 1 and 120 minutes?
2.46	5	Were you always able to navigate north up?
2.47	//	If course-up navigation was offered, how was it compared to using a paper chart?
2.48	5	How would you compare voyage monitoring using a raster chart system with voyage monitoring using a paper chart?
2.49	5	How was the voyage monitoring workload compared to a paper chart?
2.50	1/5	How would you rate using RCDS as the primary means of navigation compared to paper charts?
2.51	5	How would you evaluate the impact on the safety of navigation when using an RCDS as opposed to a paper chart?
2.52	5	Are there circumstances where you would not use RCDS for voyage monitoring? When?
2.53	5	Were there any fundamental limitations to voyage monitoring with raster charts that were not just a limit of your software? What were they?

### 3. RCDS FOR VOYAGE RECORDING

Ref #	Scores (1-5 or 0)	Questions (compared to paper chart performance where appropriate)
3.1	4	Could you record sufficient information to determine the ship's past track, time, position, heading and speed? <i>NO TIME LAG</i>
3.2	1	Were you able to add log entries manually?
3.3	1	Could you automatically record the official data used (RNC, edition, date and update history)?
3.4	5	Were you able to gather an adequate record of the voyage compared to using a paper chart?
3.5	3	Could you record the entire course made good with time marks at <u>intervals not exceeding 4 hours</u> ? <i>Can't do time marks</i>
3.6	5	Were you able to save at least the previous 12 hours of voyage track?

### 4. OTHER

Ref #	Scores (1-5 or 0)	Questions (compared to paper chart performance where appropriate)
4.1	5	Were the accuracy of all calculations independent of the characteristics of the display and consistent with the RNC accuracy?
4.2	5	Were bearings and distances measured on the display as accurate as that afforded by the resolution of the display?
4.3	2	Could you make manual updates to the chart that were distinguishable from the original chart without affecting the legibility of the chart?
4.4	5	Did the RCDS degrade the performance of any equipment that was connected to it?
4.5	4	Once learned, how user-friendly would you judge the RCDS to be?
4.6	5	Did connection to other equipment degrade RCDS performance?
4.7	5	Did your system give adequate indication of system malfunction?
4.8	5	Were you able to execute in a convenient and timely manner all route planning, route monitoring and positioning performed on a paper chart?
4.9	3	How much would you say the RCDS reduced the navigational workload compared to using a paper chart?
4.10	5	<p><b>Summary Evaluation:</b> Considering all of your experience and the questions asked above, how would you score the following statement?</p> <p>"RCDS with adequate back-up arrangements used together with an appropriate folio of up-to-date paper charts ... may be accepted as complying with the chart carriage requirements of SOLAS."</p>

**Make any other comments you feel are relevant to the use of RCDS as the primary means of navigation on the back of this page.**